

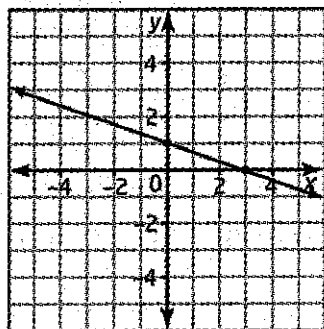
## 6.3 Graph a Line Using Intercepts

*Principles of Mathematics 9, pages 315–322*

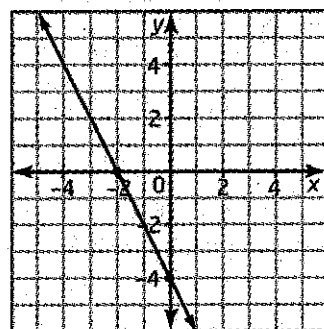
**A**

1. Identify the  $x$ - and  $y$ -intercepts of each graph.

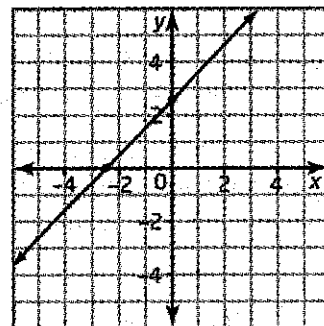
a)



b)

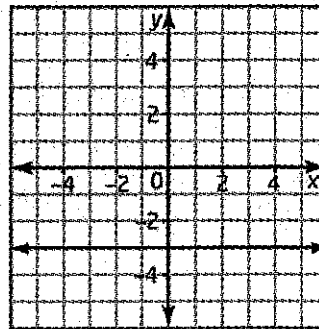


c)

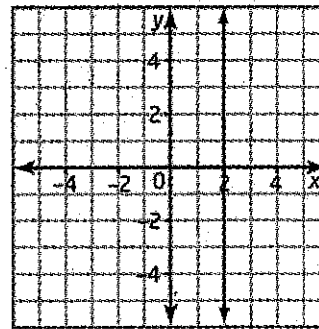


2. Identify the  $x$ - and  $y$ -intercepts of each graph, if they exist.

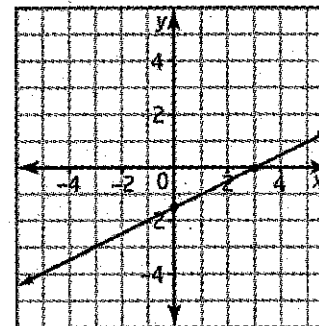
a)



b)



c)



# B

3. For each part, plot the intercepts and graph the line.

	x-intercept	y-intercept
a)	2	3
b)	-4	.1
c)	2.5	-3.5
d)	none	4
e)	-3	none

4. Determine the  $x$ - and  $y$ -intercepts and use them to graph each line.

- $3x + 4y = 12$
- $2x + y = 8$
- $x - 3y = 6$
- $-2x + 3y = 6$
- $3x = 9$
- $4y = 8$

5. Draw a graph and determine the slope of each line using the rise and run from the graph.

	x-intercept	y-intercept
a)	-3	3
b)	-2	-4
c)	0.5	2.5
d)	none	2
e)	-1	none
f)	-4	-3
g)	-1.5	1.5
h)	2	1
i)	none	-3
j)	3	none

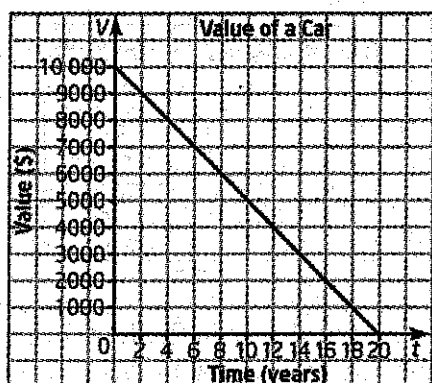
6. Find the slope of each line given the  $x$ - and  $y$ -intercepts, using the slope formula.

	x-intercept	y-intercept
a)	5	4
b)	2	-5
c)	-3	6
d)	none	7
e)	-2	none

7. An ice sculpture in the form of a tower is melting at a constant rate of 4 cm/h. The ice sculpture is 40 cm high when it first starts to melt.

- Set up a graph of height,  $h$ , in centimetres, versus time,  $t$ , in hours, and plot the  $h$ -intercept.
- Should the slope of this linear relation be positive or negative? Explain.
- Graph the line.
- What is the height of the ice sculpture after
  - 4 hours
  - 5.5 hours?
- Identify the  $t$ -intercept and explain what it means.
- Explain why this graph has no meaning below the  $t$ -axis.

8. When you buy a car, its value depreciates (becomes less) over time. The graph illustrates the value of a car from the time it was bought.

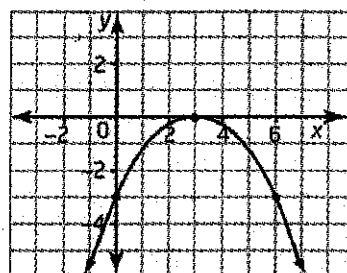


- How much did the car originally cost?
- After what period of time does the car no longer have any value?
- What is the slope of this graph and what does it mean?

C

9. Refer to question 8. Suppose that each year, the car's value becomes 75% of its previous year's value.
- Construct a table of values of the computer's value versus time for the first 5 years after the date of purchase.
  - Graph this relation. Is it linear or non-linear? Explain.
  - After how many years will the car be worth
    - Less than 30% of its original value?
    - 0
  - Does the  $t$ -intercept exist? If yes, what is it? If no, why not?
  - Compare this graph with the one in question 7. Under which system does the car's value depreciate faster? Explain.

10. a) Is the relationship in the graph linear or non-linear. Explain.



- How many  $x$ -intercepts does the graph have? What are they?
- How many  $y$ -intercepts does the graph have? What are they?
- Sketch the graph of a relation that has the same shape as the given relation with one  $x$ -intercept and one  $y$ -intercept.
- Sketch the graph of a relation that has the same shape as the given relation with no  $x$ -intercept and one  $y$ -intercept.